

Remarks

It is noted that the 35 U.S.C. 103(a) rejection of claims 1-21 as unpatentable over Martin, Jr. in view of Joosten, Ochi et al. and The Encyclopedia of Polymer Science and Engineering is repeated.

The Applicant respectfully traverses the rejection.

Claim 1 was amended in the interest of expediting the grant proceedings.

Amended claim 1 defines clearly the invention and distinguishes it clearly over the cited prior art.

Amended claim 1 is directed to a recyclable heat-sealable multi-layer material *formed by layers of the same chemical nature*. The amendment is supported by the original specification, page 3, lines 7-9.

Moreover, amended claims 1 specifies that *the density of the foamed polyester sheet ranges from 100 to 200 kg/m³*. The amendment is supported by the original specification, page 3, line 21-22.

Is submitted that there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine reference teachings so as to obtain the claimed material.

The formulation of amended claim 1 excludes the presence in the claimed material of a non-recyclable layer.

On the contrary, the material which could have been obtained by replacing the paperboard substrate of Martin Jr. with an allegedly equivalent foamed thermoplastic, would contain a non-recyclable layer which is a polyolefine layer, in particular polyethylene layer.

Moreover, a modification to eliminate the specified non-recyclable layer would render the material of Martin Jr. unsatisfactory for its intended purpose and change its principle of operation of the material of Martin Jr. since the presence of the polyolefinic layer is the core of the invention of Martin Jr. (see e.g. col. 4, lines 17-44).

Accordingly, the teachings of the opposed references are not sufficient to render the claimed subject matter obvious (*In re Ratti*, 270 F.2d 810, 123 USPQ 349).

Furthermore, a motivation for providing a foamed polyester layer instead of the paperboard layer in Martin Jr. cannot be based on the alleged equivalence between thermoplastic foamed sheet and paperboard as substrate in fabricating juice containers of Joosten, since Joosten lacks the necessary teaching regarding the specific thermoplastic foamed material which is actually suitable to perform the invention as claimed, i.e. a polyester foamed material.

There is no teaching or suggestion in Joosten or in any other reference of record that a polyester foam having a density ranging between 100 and 200 Kg/m³ would actually be suitable to perform the intended function.

As stated in the specification at page 2, lines 2-11, attempts to obtain thermoplastic containers having the necessary rigidity comparable with the paperboard have failed because the use of polymeric materials such as polyolefins implies using thickness not economical and not processable due to difficulties in folding and sealing in phase of closing the containers. Moreover, other thermoplastic materials such as foamed polystyrene are not employable due to their fragility.

Low density foamed PET would also have appeared usable because it cannot be folded without breakage along the lines of a pattern creased on it (Dr. Giovannini's declaration).

Only the foamed sheet used by Ochii et al. could have been considered to be a suitable material but there are doubts that said PET sheet can really be folded without breakage along lines of the creased pattern. The box shaped container of Ochii et al. is actually obtained by gradually pushing the foamed sheet into the cavity of a mold and developing the box shape by pouring into it the molten hot melt adhesive.

In any case, if breakage occurs it would be without negative consequences (contrary to the case of beverages) since the hot melt adhesive in solidifying adheres to the sheet inglobating it in an unitary body.

In addition, Ochii et al. does not offer a remedy to the deficiency of Joosen to teach the specific polyester foamed layer which is actually suitable to perform the invention.

The polyester foam sheet used in the claimed material differs from that of Ochii et al.

The PET foam of Ochii et al has an expansion ratio of 4-5 (as for the computer translation of JP-07-156980, page 2, line 8, herewith enclosed for a quick reference). Accordingly, the density of the PET foam of Ochii et al., calculated as the ratio between the PET density which is 1400 kg/m³ and the expansion ratio which is from 4 to 5, ranges from 280 to 350 kg/m³. By contrast, the foamed polyester of the invention has a density of 100-200 kg/m³.

Furthermore, the foamed sheet of Ochii et al. would be foldable without breakage along the lines of a pattern creased on it. By contrast, the foamed sheet used in the claimed multilayer material cannot be folded as such without breakage (as stated in the declaration of Dr. Giovannini, the test of which was carried out on a foam sheet having a density of 180 kg/m³).

Thus, a foamed sheet of polyester having a density as claimed would have appeared unsuitable for use in a material which must be foldable without breakage.

Such a foamed sheet was rendered foldable without breakage by the inventors of the present invention by adhering to it a film of a low melting point polyester.

Nowhere in the references of record there is a teaching or suggestion suitable to arrive to this unforeseeable result.

It will be noted that a sincere effort has been made to positively respond to all of the points raised by the Examiner.

In view of the foregoing, favorable action on the merits, including entry and approval of all amendments, reconsideration and withdrawal of each rejection, and allowance of all claims is respectfully solicited.

Respectfully submitted,



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